REMARKS

This document, co-filed with a request for continued examination, presents claim amendments and addresses issues raised in the final office action dated July 14, 2009 ("final Office Action") and the advisory action dated January 19, 2010 ("Advisory Action") the Examiner's Answer to the Appeal Brief dated June 7, 2010 ("Examiner's Answer").

Applicants have amended each of claims 1, 8, and 10 to include two features of the recited complex oxide hydrate, i.e., the relative weight and the particle size of the complex oxide hydrate. Support for these two features can be found in the specification at page 28, lines 6-16 and page 35, lines 19-30.

Applicants have also amended claims 1, 8-10, and 22 to promote clarity.

Applicants have added new claims 29-39. Support for new claims 29-33 can be found in the specification at page 28, lines 6-16 and page 35, lines 19-30. Support for new claims 34-39, on the other hand, appears in the specification at page 67, lines 30 through page 71, line 2.

Claims 5 and 15-21 have been cancelled and claims 27 and 28 were previously cancelled.

Upon entry of the above amendments, claims 1-4, 6-14, 22-26, and 29-39 will be pending and under examination. Applicants respectfully request that the Examiner reconsider this application, as amended, in view of the following remarks.

Rejection under 35 U.S.C. § 112, first paragraph

In the final Office Action, the Examiner rejects claims 27 and 28 for lack of written description on the ground that the Zn:Si/Al ratio range "82/18-99/1" added thereto in a response to an earlier office action has no support in the specification. See the final Office Action, page 4, lines 3-7. In response, Applicants pointed out that, in accordance with the ruling of *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976), the range at issue is supported by the specification, in which a 50/50-99/1 Zn:Si/Al ratio range is set forth at page 6, line 5, and a 82/18 Zn:Si/Al ratio was demonstrated in

Examples 1-11. Applicants further amended claims 1, 8, and 10 to recite this range and cancelled claims 27 and 28.

In the subsequently issued Advisory Action, the Examiner refused to accept Applicants' arguments. She indicates that "to make the [recited] range commensurate in scope with the support in the specification," Applicants should "(1) restrict the content of [the complex oxide hydrate recited in claims 1, 8, and 10]," "(2) [r]estrict the particle size of the [complex oxide hydrate]," and "[l]imit the metal hydroxide complex to those present in the examples." See the page 5, lines 2-7.

Without acquiescence, Applicants have amended claims 1, 8, and 10 to meet requirements (1) and (2) imposed by the Examiner. More specifically, each of these claims recites the limitations of (1) 0.001-5 parts complex oxide hydrate per 100 parts resin and (2) the 0.001-1000 μm particle size of the complex oxide hydrate.

Referring to requirement (3), it appear to be the Examiner's position that the metal hydroxide complex should be limited to Zn-Si oxide since the examples provided in the specification only demonstrate use of Zn-Si oxide, but not Zn-Al oxide. Applicants would like to point out that, in Example 9, Zn-Al oxide was used. See pages 68-69. As such, both Zn-Si oxide and Zn-Al oxide recited in claims 1, 8, and 10 are supported by the specification. The Examiner clearly errs in requiring limitation of the complex oxide hydrate to only Zn-Si oxide.

In view of the above amendments/remarks, Applicants submit that the range of 82/18-99/1 recited in claims 1, 8, and 10 are fully supported by the original specification in compliance with the ruling of *In re Wertheim*. It is respectfully requested that this limitation be entered.

Of note, new claims 29-39, dependent from claim 1, 8, or 10, also require the Zn:Si/Al ratio range "82/18-99/1." They recite further limitations to the relative weight of the complex oxide hydrate and/or the particle size of the complex oxide hydrate. In particular, claims 34-39 each require that the complex oxide hydrate be about 0.5 parts per 100 parts the absorbent resin and its particle diameter be about 0.36 μm, both features being demonstrated by Examples 1-11. These new claims should also be entered.

Rejection under 35 U.S.C. § 103(a)

The Examiner rejects claims 1-26 for obviousness over Takai, US Patent 6,284,362 (Takai) in view of Yamada et al., European Patent 0,282,287 (Yamada) or Tai et al. US Patent Application Publication 2003/0018114 (Tai). See the final Office Action, page 5, lines 8-13. Independent claims 1, 8, and 10 will be addressed first.

Claim 1 covers a water-absorbent resin composition containing Zn-Si/Al oxide. Claim 8 covers a sanitary product containing Zn-Si/Al oxide. Claim 10 covers a method for preparing a water-absorbent resin composition containing Zn-Si/Al oxide. Each of them requires that the mass ratio of the Zn content to the Si/Al content be in the range from 82/18 to 99/1.

Takai discloses a water-absorbent composition containing a hydrogel resin and an inorganic metal oxide microfiller. Yamada discloses a resin composition having 5-60 mole% ZnO, 5 to 80 mole% SiO_2, and 0-60 mole% Al_2O_3. Tai discloses a resin composition, in which the weight ratio of the Zn compound to the Si compound is in a broad range of 1:5 to 5:1. None of the three references teaches or suggests a mass ratio of the Zn content to the Si/Al content ranging from 82/18 to 99/1. Yet, the Examiner asserts that a *prima facie* case of obviousness has been established, as one skilled in the art would have arrived at the claimed invention in view of these three references. See the final Office Action, page 6, lines 15-18.

In the response to the final Office Action, Applicants pointed out that a *prima facie* case of obviousness, if established, can be successfully rebutted by the unexpected results set forth in the specification. The unexpected results are summarized as following:

The specification describes 11 compositions. See Examples 1-11 on pages 66-69. All of these compositions contained Zn oxide and Si/Al oxide at the ratio of 82/18 or 91/10. In other words, they are all called for in claims 1, 8, and 10. All of these compositions had excellent deodoring effect; namely, after 30 minutes of absorption, 6 ppm or a much lower level of hydrogen sulfide remained in the residue and the deodoring results were rated between 1 and 2, i.e., between "barely discernible smell"

and "discernible yet tolerable smell." See Table 2 on pages 76-77 and Table 3 on pages 78-79. By contrast, the compositions prepared in Comparative Examples 5 and 6 contained Zn oxide and Si oxide at the ratio of 40/60. See pages 70-71. These two compositions are not covered by claim 1, but correspond to the Tai compositions, which may contain Zn oxide and Si/Al oxide at the ratio ranging from 1:5 to 5:1. Both compositions exhibited significantly lower deodoring effect. More specifically, 10.5 ppm and 8 ppm of hydrogen sulfide remained in the residue after absorption with these compositions for 30 minutes and the deodoring results were rated between 2 and 3, i.e., between "discernible yet tolerable smell" and "easily discernible smell."

In the Advisory Action and the Examiner's Answer, the Examiner refuses to accept this argument and raises three issues in connection with these unexpected results. Applicants address these issues below:

I

In the Advisory Action, the Examiner asserts that the unexpected results are not commensurate in scope with the claims, which "recite an extremely generic resin requiring only an unsaturated monomer having an acid group, and do not recite any compositional amounts for resin and oxide hydrate content." See page 7, lines 5-7.

Applicants would like to point out that the resins recited in claims 1, 8, and 10 are limited to those having an absorbent property, in addition to being prepared from an unsaturated monomer as mentioned by the Examiner. The 11 examples provided in the specification show that using Zn-Si/Al oxides at a Zn:Si/Al ratio of 82/18-99/1 together with the tested absorbent resins exhibited an enhanced odor-absorbing property. A skilled person in the art, in view of these results, would recognize that other absorbent resins containing such Zn-Si/Al oxide would also have an enhanced odor-absorbing property. In short, the resin recited in claims 1, 8, and 10 by no means is overly broad.

As to the "compositional amounts" for resin and oxide hydrate, Applicants have amended claims 1, 8, and 10 to limit the weight of the complex oxide hydrate relative to the resin. See discussion above.

In view of the above remarks and amendments, Applicants submit that the unexpected results demonstrated above are commensurate in scope with claims 1, 8, and 10.

II

In the Advisory Action, the Examiner also asserts that "applicant has not clearly presented data on the statistical relevance of the results; it is not clear whether the presented results are a single experiment, or a series of repeats, nor is it clear what sort of differences would be statistically relevant given the experimental setup and protocol as well as the standard detection abilities of the equipment in question." See page 6, lines 14-18.

Applicants have calculated the F and T values to determine whether the deodorizing tests used in Examples 1-11 and Comparative Examples 5 and 6 to acquire data provided in Table 3 are statistically significant.

The F-test result in the Declaration by Inventor Yasuhisa Nakashima, attached hereto as "Exhibit A," show the variance ratio (F) is smaller than the F boundary (F0.05), indicating that the P value is larger than the significant level (0.05) and that the null hypothesis cannot be rejected. In short, the group of Examples 1-11 and the group of Comparative Examples 5-6 have the same variance.

The T-test result in the Declaration also show that the absolute t value is larger than the t boundary, indicating that the P value is smaller than the significant level (0.05) and that the null hypothesis is rejected and the alternative hypothesis is accepted. Thus, the results of the Examples group are statistically significant compared to the results of the comparative Examples group.

III

Referring to Table 2 of the Specification (including data for both the compositions called for in claims 1, 8, and 10 and two Tai compositions), the Examiner asserts in the Examiner's Answer that "[it] shows remaining hydrogen sulfide after 30 minutes of 2-6 ppm in the inventive examples, which have a zinc/silicon ratio of 82/18, and 7.5 to 15.5 in the comparative examples, which have a ratio of 40/60." See page 24, lines 12-14.

She proceeds to question whether these data manifest significance in practical use of the compositions of this invention. See page 24, lines 14-16.

In Table 2, Comparative Examples 7 and 12 resulted in remaining H_2S levels of 7.5 ppm and 15.5 ppm, respectively. It is clear that the Examiner mistakenly believes that the two compositions used in Comparative Examples 7 and 12 exemplify two Tai compositions. While Tai teaches use of **Zn**-Si/Al oxides, **Ti**-Si/Al oxides were used in these two Comparative Examples. Thus, contrary to the Examiner's belief, Tai compositions were not used in Comparative Examples 7 and 12.

Indeed, among the Comparative Examples listed in Table 2, only the compositions used in Comparative Examples 5 and 6 contained Zn-Si/Al oxides having a Zn:Si/Al ratio of 40/60 and thus correspond to the Tai compositions. Applicants have therefore only compared these two compositions with those used in Examples 1-10, which are covered by claims 1, 8, and 10.

The data in Table 2 show that, while the H_2S level remained in urine treated for 30 minutes with the compositions used in Comparative Examples 5 and 6 was 8-10.5 ppm, the H_2S level in urine treated with the compositions of this invention for also 30 minutes was reduced to 2-6 ppm (mostly, 2-3 ppm). In other words, the latter compositions further lowered the H_2S level as much as 25%- 81%[1], as compared with the former composition. Since H_2S is a major odorant, reducing its concentration by 25%-81% makes significant difference in sanitary uses.

The claimed compositions also effectively absorb, in addition to H_2S, other odorants, e.g., NH_3. While the NH_3 level remained in urine treated with the Tai compositions for 10 and 30 minutes were 280-300 ppm and 120-130 ppm (see Comparative Examples 5 and 6 in Table 2), respectively, the NH_3 level in urine treated with the compositions of this invention for 10 and 30 minutes were only 90-250 ppm and 20-80 ppm (see Examples 1-10 in Table 2), respectively. In short, the claimed

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[1] The percentages are calculated as follows:
[(8 ppm -6 ppm)/8 ppm] X 100% = 25%
[(10.5 ppm – 2 ppm)/10.5 ppm] X 100% = 81%

compositions are more effectively in absorbing odorant NH_3 than the prior art compositions.

Further, the data in Table 3 show that the deodorizing effect of the claimed compositions, when they were in contact with urine for 6 hours, was between "barely discernible smell" and "discernible yet tolerable smell," and those of the prior art composition was between "discernible yet tolerable smell" and "easily discernible smell." These data indicate that use of the claimed compositions to deodorize urine leads to tolerable odor, while use of the prior art compositions fails to do so.

Given the above-described differences, the advantage of the composition called for in claims 1, 8, and 10 over the prior art composition is significant. Thus, the Examiner's contention is fallacious.

IV

In view of the above remarks, Applicants submit that all of the unexpected results set forth above demonstrate a significant advantage of the claimed compositions over the prior art compositions and are commensurate in scope with claims 1, 8, and 10. These results successfully rebut any prima facie case of obviousness established by the Examiner. In other words, claims 1, 8, and 10 are nonobvious over the cited references. So are claims 2-4, 6-7, 9, 11-14, 22-26, each of which depends from claim 1, 8, or 10.

New Claims

New claims 29-25 depend from claim 1, new claims 36 and 37 depend from claim 8, and new claims 38 and 39 depend from claim 10. For at least the reasons set forth above that independent claims 1, 8, and 10 are allowable, so are these new dependent claims.

Double-Patenting rejection

The Examiner rejects claims 1, 4, 6-10, and 22-26 for obviousness-type rejection, relying on (1) claims 1-4, 6, 21-22, 24, 26, and 27-29 of co-pending Application No. 10/555,707, (2) claims 1-6, 10, 12, 14, and 18-25 of co-pending Application No.

10/570,965, (3) claims 1-5, 9, and 10 of co-pending Application No. 11/662,590, and (4) claims 1, 6, and 11-15 of US Patent No. 7,473,470. See the final Office Action, page 2, line 12 through page 3, line 17.

Applicants would like to address this double-patenting issue only after the Examiner has removed the obviousness rejection discussed above.

CONCLUSION

It is believed that all of the pending claims have been addressed. Note that, however, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

Please apply any other charges or credits to Deposit Account No. 50-4189, referencing Attorney Docket No. 60004-111US1.

Respectfully submitted,

Date: 8-9-10

Y. Rocky Tsao, Ph.D., J.D.
Attorney at Law
Reg. No. 34,053

Customer No. 69713
Occhiuti Rohlicek & Tsao LLP
10 Fawcett Street
Cambridge, MA 02138

EXHIBIT A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	: Hiroko Ueda et al.	Art Unit	: 1796
Serial No.	: 10/565,324	Examiner	: Darcy D Laclair
Filed	: January 20, 2006	Conf. No.	: 2203
Title	: Water-absorbent Resin Composition And Method For Producing Thereof, And Absorbent Material And Absorbent Product Using Thereof		

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION BY INVENTOR UNDER 37 C.F.R. 1.132

I, Yasuhisa Nakashima, hereby declare that:

1. I am a co-inventor of the subject matter described and claimed in the above-identified application, which relates to a composition containing resin and Zn-Al/Si oxide hydrate.

2. I or others have conducted a deodorizing assay described in this application at page 50, lines 5-31. In this assay, 20 people smelled human urine sample treated with different water-absorbent resin compositions to determine the deodorizing effect of these compositions. See page 50, lines 14-16.

3. I or others have also conducted F-test and T-test on the results of the deodorizing assay, which are shown in the Table 3.

First, F-test was conducted to check whether the groups of the Examples and the group of the Comparative Examples have the same variance. The results are shown below:

F-test: tests for variance with 2 samples (significance level = 5%)

0 hours later	Examples group	Comparative Examples group
Average	1.32	3.15
Variance	0.035	0.674
Observed number	10	13
Degree of freedom	9	12
Variance ratio observed	0.052	=F
P(F≦f) (one sided)	$5.97*10^{-5}$	
F boundary (one sided)	0.259	=F0.05

3 hours later	Examples group	Comparative Examples group
Average	2.29	3.68
Variance	0.028	0.268
Observed number	10	13
Degree of freedom	9	12
Variance ratio observed	0.103	=F
P(F≦f) (one sided)	0.00095	
F boundary (one sided)	0.259	=F0.05

6 hours later	Examples group	Comparative Examples group
Average	2.58	3.98
Variance	0.020	0.212
Observed number	10	13
Degree of freedom	9	12
Variance ratio observed	0.092	=F
P(F≦f) (one sided)	0.00061	
F boundary (one sided)	0.259	=F0.05

24 hours later	Examples group	Comparative Examples group
Average	3.01	4.08
Variance	0.012	0.265
Observed number	10	13
Degree of freedom	9	12
Variance ratio observed	0.046	=F
P(F≦f) (one sided)	$3.44*10^{-5}$	
F boundary (one sided)	0.259	=F0.05

In all tests, the variance ratio (F) is smaller than the F boundary (F0.05), indicating that the P value is larger than the significant level (0.05) and that the null

hypothesis cannot be rejected. In conclusion, the Examples group and the Comparative Examples group have the same variance at different treatment times.

Next, T-test was conducted in order to determine whether there is statistical significance between the Examples group and the Comparative Examples group. The results are shown below:

T-test: tests with 2 samples assumed as having same variance (significance level = 5%)

0 hours later	Examples group	Comparative Examples group
Average	1.32	3.15
Variance	0.035	0.674
Observed number	10	13
Variance pooled	0.40	
Difference from hypothetical average	0	
Degree of freedom	21	
t	-6.89	
$P(T \leqq t)$ (one sided)	$4.135*10^{-7}$	=Risk rate
t boundary (one sided)	2.080	
$P(T \leqq t)$ (two sided)	$8.270*10^{-7}$	
t boundary (two sided)	2.414	

3 hours later	Examples group	Comparative Examples group
Average	2.29	3.68
Variance	0.028	0.268
Observed number	10	13
Variance pooled	0.17	
Difference from hypothetical average	0	
Degree of freedom	21	
t	-8.16	
$P(T \leqq t)$ (one sided)	$2.985*10^{-8}$	=Risk rate
t boundary (one sided)	2.080	
$P(T \leqq t)$ (two sided)	$5.970*10^{-8}$	
t boundary (two sided)	2.414	

6 hours later	Examples group	Comparative Examples group
Average	2.58	3.98
Variance	0.020	0.212

Observed number	10	13
Variance pooled	0.13	
Difference from hypothetical average	0	
Degree of freedom	21	
t	-9.23	
$P(T \leqq t)$ (one sided)	$3.869*10^{-9}$	=Risk rate
t boundary (one sided)	2.080	
$P(T \leqq t)$ (two sided)	$7.738*10^{-9}$	
t boundary (two sided)	2.414	

24 hours later	Examples group	Comparative Examples group
Average	3.01	4.08
Variance	0.012	0.265
Observed number	10	13
Variance pooled	0.16	
Difference from hypothetical average	0	
Degree of freedom	21	
t	-6.41	
$P(T \leqq t)$ (one sided)	$1.189*10^{-6}$	=Risk rate
t boundary (one sided)	2.080	
$P(T \leqq t)$ (two sided)	$2.378*10^{-6}$	
t boundary (two sided)	2.414	

In all tests, the absolute t value is larger than the t boundary, indicating that the P value is smaller than the significant level (0.05) and that the null hypothesis is rejected and the alternative hypothesis is accepted. In conclusion, the results of the Examples group are statistically significant compared to the results of the Comparative Examples group at different treatment time.

4. All statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so make are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Cod and that such willful false statements may jeopardize the validity of the application and any patent issued thereon.

Respectfully submitted,

Date: Aug. 4, 2010

Yasuhisa Nakashima

Yasuhisa Nakashima
Assistant Research Leader

E-203, Hamadashataku,
931-11, Hamada, Aboshi-ku,
Himeji-shi, Hyogo 671-1242
Japan